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Relevance scale ☐ ☐ ☐ ☐ ☐**21** [CAD for FPGAs: Multiplexer restructuring for FPGA implementation cost reduction](#)

Paul Metzgen, Dominic Nancekievill

June 2005 **Proceedings of the 42nd annual conference on Design automation DAC '05**

Publisher: ACM Press

Full text available: [pdf\(691.28 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

This paper presents a novel synthesis algorithm that reduces the area needed for implementing multiplexers on an FPGA by an average of 18%. This is achieved by reducing the number of Lookup Tables (LUTs) needed to implement multiplexers. The algorithm relies on reimplementing 2:1 multiplexer trees using efficient 4:1 multiplexers. The key to the algorithm's performance lies in exploiting the observation that most multiplexers occur in busses. New optimizations are employed which pay a small cost ...

**Keywords:** FPGA, busses, logic optimization, multiplexers, recoding, restructuring, synthesis

**22** [Generation of very large circuits to benchmark the partitioning of FPGA](#)

Joachim Pistorius, Edm e Legai, Michel Minoux

April 1999 **Proceedings of the 1999 international symposium on Physical design ISPD '99**

Publisher: ACM Press

Full text available: [pdf\(1.01 MB\)](#) Additional Information: [full citation](#), [references](#), [index terms](#)**23** [Restructuring logic representations with easily detectable simple disjunctive decompositions](#)

H. Sawada, S. Yamashita, A. Nagoya

February 1998 **Proceedings of the conference on Design, automation and test in Europe DATE '98**

Publisher: IEEE Computer Society

 Full text available: [pdf\(125.30 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)  
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Simple disjunctive decomposition is a special case of logic function decompositions, where variables are divided into two disjoint sets and there is only one newly introduced variable. This paper presents that many simple disjunctive decompositions can be found


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RJ Petersen, BL Hutchings - 5th International Workshop on Field-Programmable Logic and ..., 1995 - splish.ee.byu.edu

... For comparison to **equivalent** implementations using 1-2 FPGAs ... for two custom FIR filter ASICs, the **Logic** Devices ... not unreasonable for a **FPGA**-based **DSP** system. This ...

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YY Tzou, HJ Hsu - Power Electronics, IEEE Transactions on, 1997 - ieeexplore.ieee.org

... grouped together as a configurable **logic** block (CLB ... 3. Circuit configuration of the **DSP**-controlled **FPGA** ... 5. **Equivalent** PWM switching patterns generated from three ...

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[FPGA implementation of FIR filters using pipelined bit-serial canonical signed digit multipliers](#)

S He, M Torkelson - Custom Integrated Circuits Conference, 1994., Proceedings of ..., 1994 - ieeexplore.ieee.org

... addition, outperforms some dedicated commercial **DSP** chips ... can produce a near **equivalent** performance ... in wordlength latency with maximum **logic** level **equivalent** ...

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MA Wickert, J Papenfuss - Microwave Theory and Techniques, IEEE Transactions on, 2001 - ieeexplore.ieee.org

... an asymmetric FIR filter, while introducing the **equivalent** group delay ... with a maximum of 80 000 **logic** gates. ... The **DSP** has enough available bandwidth to easily ...

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K Rajagopalan, P Sutton - Circuits and Systems, 2001. ISCAS 2001. The 2001 IEEE ..., 2001 - ieeexplore.ieee.org

... including digital filters, correlators and other **DSP** applications ... architecture requires 3.6 times fewer **logic** blocks (2.8 times fewer **equivalent** gates) than ...

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## 21 [Level set and PDE methods for computer graphics](#)


 David Breén, Ron Fedkiw, Ken Museth, Stanley Osher, Guillermo Sapiro, Ross Whitaker  
 August 2004 **ACM SIGGRAPH 2004 Course Notes SIGGRAPH '04**

Publisher: ACM Press

 Full text available: pdf(17.07 MB)    Additional Information: [full citation](#), [abstract](#), [citations](#)

Level set methods, an important class of partial differential equation (PDE) methods, define dynamic surfaces implicitly as the level set (iso-surface) of a sampled, evolving nD function. The course begins with preparatory material that introduces the concept of using partial differential equations to solve problems in computer graphics, geometric modeling and computer vision. This will include the structure and behavior of several different types of differential equations, e.g. the level set eq ...

## 22 [Logic synthesis and mapping: Placement-driven technology mapping for LUT-based](#)


**FPGAs**

Joey Y. Lin, Ashok Jagannathan, Jason Cong

 February 2003 **Proceedings of the 2003 ACM/SIGDA eleventh international symposium on Field programmable gate arrays FPGA '03**

Publisher: ACM Press

 Full text available: pdf(252.89 KB)    Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

In this paper, we study the problem of placement-driven technology mapping for table-lookup based FPGA architectures to optimize circuit performance. Early work on technology mapping for FPGAs such as Chortle-d[14] and Flowmap[3] aim to optimize the depth of the mapped solution without consideration of interconnect delay. Later works such as Flowmap-d[7], Bias-Clus[4] and EdgeMap consider interconnect delays during mapping, but do not take into consideration the effects of their mapping solution ...

**Keywords:** FPGA synthesis, logic re-synthesis, mapping

## 23 [Real-time shading](#)



Marc Olano, Kurt Akeley, John C. Hart, Wolfgang Heidrich, Michael McCool, Jason L. Mitchell, Randi Rost

 August 2004 **ACM SIGGRAPH 2004 Course Notes SIGGRAPH '04**

Publisher: ACM Press

 Full text available: pdf(7.39 MB)    Additional Information: [full citation](#), [abstract](#)

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